

## APPENDIX A

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### INITIAL VERIFICATION CHECKLIST

*This document contains a generic Initial Verification Checklist for CDM and JI projects, which must be seen in conjunction with the Validation and Verification Guidelines and the Initial Verification Report Template.*

*This initial verification checklist serves the following purposes:*

- *It organises, details and clarifies the requirements a CDM/JI project is expected to meet straight before starting its operation; and*
- *It ensures a transparent initial verification process by inducing the verifier to document how a particular requirement has been verified and which conclusions have been reached;*

*This checklist contains a table with generic aspects for initial verification of a CDM or JI project. Project specific aspects set by the approved PDD have to be amended as a result of the review of the monitoring plan and the validation report. The use of initial verification and this check-list may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued as a consequence of the initial verification, a corrective action request, a forward action request or clarification request should be stated.*

*Before this generic checklist can be applied for the initial verification of a specific project, the verifier must review and adjust/amend the checklist to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the verifier's professional judgement and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance. Given the above, the checklist is neither exhaustive nor prescriptive.*

**Initial Verification Checklist**

OBJECTIVE	Ref.	COMMENTS	Concl.(incl FARs/CARs)
<b>A. Opening Session</b>			
<b>A.1. Introduction to audits</b>		<p>Outline of the Initial verification process was presented by Team Leader.</p> <ul style="list-style-type: none"> <li>• Objectives</li> <li>• Verification team, plan</li> <li>• Confirmation of participation</li> <li>• Definition of FAR/CAR</li> <li>• Obligation to confidentiality</li> </ul>	OK
<b>A.2. Clarification of access to data archives, records, plans, drawings etc.</b>		Activities related to the project at all locations, eg. Measurement, calculation, reporting, calibration, control of documentation and records is planned and covered as per procedures defined. Access to these was verified to be clear and implementation was verified to be effective.	OK
<b>A.3. Contractors for equipment and installation works</b> <i>Who has installed the equipment? Who was contracted for planning etc.?</i>		<p>Major equipment suppliers at three project locations have been:</p> <p>Turbines : M/s. Boving Fouress Limited, Bangalore</p> <p>Generators: M/s. Boving Fouress Limited, Bangalore</p> <p>Switchgear system: ABB, Pune</p>	OK
<b>A.4. Actual status of installation works</b> <i>Project installation should be finished at time of initial verification in so far as the project should be ready to generate emission reductions afterwards.</i>		The commercial operation of first project at Guntakandala location started on 06.02.2002 and export of power to the grid started from 06.02.2002. So, project considered generation of emission reductions from 06.02.2002 to 24.03.2006 as a part of this monitoring period.	OK

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<b>B. Open issues indicated in validation report</b> <i>Especially in projects which are not yet registered at CDM-EB or JI-SB, there might be some outstanding issues which should have been indicated by the validation report.</i>			
<b>B.1. Missing steps to final approval</b>		According to the validation report all the CAR's and CL's are closed. This was verified during verification, by DNV	OK
<b>C. Implementation of the project</b> <i>This part is covering the essential checks during the on-site inspection at the project's site, which is indispensably for an initial verification</i>			
<b>C.1. Physical components</b> <i>Check the installation of all required facilities and equipment as described by the PDD.</i>		The project is a bundled activity of three projects and all three projects have equipment with same capacity. The project comprises of 2X 2 MW Vertical Kaplan Turbines at each location along with synchronous generator of 3 Phase, with a rated out put of 2000 KW each, that are in line with as defined in registered PDD.	OK
<b>C.2. Project boundaries</b> <i>Check whether the project boundaries are still in compliance with the ones indicated by the PDD.</i>		The project boundaries and key equipments for the project activity are in line with the PDD encompassing the physical, geographical site of the renewable generation source. The project boundary covers the diversion structure, power canal, penstock, powerhouse, power evacuation system and tailrace canal.	OK
<b>C.3. Monitoring and metering systems</b> <i>Check whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		The metering system as envisaged in the PDD has been verified to be installed and in place. The metering of generated and exported power happens through a meter, which is calibrated periodically by APTRANSCO. The calibration process is in place as defined in procedures.	OK
<b>C.4. Data uncertainty</b>		All equipment used for measurement and metering are calibrated as per	OK

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<i>How will data uncertainty be determined for later calculations of emission reductions? Is this in compliance with monitoring and metering equipment?</i>		procedures defined and certificates of calibration are in place.	
<b>C.5. Calibration and quality assurance</b> <i>Check how monitoring and metering systems are subject to calibration and quality assurance routines</i> a) with installation b) during future operation		The calibration status of metering and monitoring equipment is up to date and the procedures defined cover the process of calibration. The meters used for power monitoring are calibrated by APTRANSCO authorities, other electricity meters like auxiliary and gross generation meter are calibrated by an external independent party agencies. The certificates of calibration are verified during site inspection.	OK
<b>C.6. Data acquisition and data processing systems</b> <i>Check the eligibility of used systems.</i>		As above.	OK
<b>C.7. Reporting procedures</b> <i>Check how reports with relevance for the later determination of emission reductions will be generated</i>		Project Management system procedures, including responsibility and authority of monitoring and reporting activities, have been verified to be as per that indicated in the registered validation report.	OK
<b>C.8. Documented instructions</b> <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions have access and knowledge of documented instructions, forming a part of the project's management system.</i>		All the activities have been performed as per the defined procedures and are satisfying the requirements needed to monitor emission reductions effectively.	OK
<b>C.9. Qualification and training</b> <i>Check whether the personnel performing tasks with sensitivity for the monitoring of emission reductions has the appropriate competences, capabilities and qualifications to ensure the required data quality.</i>		Tasks have been performed as per procedures defined and by competent personnel. The procedures defined take care of required competence for performing tasks as per documented instructions.	OK
<b>C.10. Responsibilities</b>		Responsibility and authority of monitoring and reporting activities have been	OK

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<i>Check whether all tasks required to gather data and prepare a monitoring report with the necessary quality have been allocated to responsible employees.</i>		verified to be as per that indicated in the registered PDD and allocated to the responsible employees.	
<b>C.11. Troubleshooting procedures</b> <i>Check whether there are possibilities of redundant data monitoring in case of having problems with the used monitoring equipment. Such procedures may reduce risks for the buyers of emission reductions (e.g. the Client)</i>		The data redundancy is maintained by multi stage monitoring as the export power is monitored by both project team and also APTRANSCO officials. This would reduce risk for the buyers on emission reductions.	OK
<b>D. Internal Data</b> <i>Identifying the internal GHG data sources and ways in which the data have been collected, calculated, processed, aggregated and stored should be part of initial verification to assess accuracy and reliability of the internal GHG data..</i>			
<b>D.1. Type and sources of internal data</b> <i>Acquire information on type and source of internal GHG data, which is used in calculations of emission reductions. E.g.. "continuous direct measurements", "site-specific correlations", "periodic direct measurements", "use of models" and/or "use of default emissions factors".</i>		Southern grid emission factor is calculated ex-post based on data from CEA annual reports during total crediting period. The power exported to the grid is monitored on daily basis by project team and on monthly basis by APTRANSCO officials in presence of plant management. This daily monitoring also includes the monitoring of auxiliary consumptions and the power imported from the grid during plant shutdowns and annual maintenance.	OK
<b>D.2. Data collection</b> <i>How is data collected and processed? What are the means of quantifying emissions from the different data sources?</i>		All relevant data used to determine GHG Emission are collated by means of Spread Sheets, collated and reported through the manual input.	OK
<b>D.3. Quality assurance</b> <i>Does internal data collection underlie sufficient quality assurance routines?</i>		Yes. The data undergoes multiple checks through operating team and plant management as a part of quality assurance.	OK

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<b>D.4. Significance and reporting risks</b> <i>Assess the significance and reporting risks related to the different internal data sources. Potential reporting risks may be related to the calculation methods, accuracy of data sources and data collection and/or the information systems from which data is obtained. The significance of and risks associated with the data source indicate the level of verification effort required at a later stage.</i>		No significant reporting risks are foreseen. All the data required for emission reduction calculations are manually recorded in log sheets once in each shift i.e., after every 8 hours. These are then transferred to a spread sheets for emission reduction calculations. These data will be cross verified with monthly monitoring record, carried out by external party like APTRANSCO officials pertaining to the details of net power exported to the grid. The data related to baseline emissions is based in CEA data hence uncertainty is less through out the crediting period.	OK
<b>E. External Data</b> <i>Especially for data of baseline emissions there might be the necessity to include external data sources. The access to such data and a proof of data quality should be part of initial verification. If it is deemed to be necessary, an entity delivering such data should be audited.</i>			
<b>E.1. Type and sources of external data</b> <i>Acquire information on type and source of external data, which is used in calculations of emission reductions</i>		<p>The external data sources used is mainly data for calculation of Southern grid emission factor based on CEA annual reports.</p> <p>The audit of these external data may not be required as these are independent and authorised sources of data.</p>	OK
<b>E.2. Access to external data</b> <i>How is data transferred? How can reproducibility of data set be ensured?</i>		Transfer and compilation of data will be done manually. The reproducibility of data will be through redundant data captured.	OK
<b>E.3. Quality assurance</b> <i>Does external data underlie any quality assurance routines?</i>		Yes the external data are subjected to quality assurance routines as CO2 emission factor for grid (as per Central Electricity Authority reports) is calculated ex-post for entire crediting period.	OK
<b>E.4. Data uncertainty</b> <i>Is it possible to assess the data uncertainty of external data? Are such routines included in reporting procedures?</i>		The actual generation and heat rates are obtained from CEA reports. Carbon emission factors (CEF) for fuels are taken from IPCC default emission factors. This is been verified and found reasonable as the uncertainty impact is very negligible.	OK

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<b>E.5. Emergency procedures</b> <i>Are there any procedures which will be applicable if there is no access to relevant external data?</i>		No such emergencies are fore seen.	OK
<b>F. Environmental and Social Indicators</b> <i>A Monitoring Plan may comprise environmental and/or social indicators which could be necessary to monitor for the success of the project activity.</i>			
<b>F.1. Implementation of measures</b> <i>A project activity may demand for the installation of measures (e.g. filtering systems or compensation areas), which are exceeding the local legal requirements. A check of the implementation or realization of such measures should be part of the initial verification.</i>		The project activity is not expected to lead to any adverse environmental impacts.	OK
<b>F.2. Monitoring equipment</b> <i>Check where necessary whether the required metering systems have been installed. The meters have to comply with appropriate quality standards applicable for the used technology.</i>		As on F.1.	OK
<b>F.3. Quality assurance procedures</b> <i>What quality assurance procedures will be applied for such data?</i>		As on F.1.	OK
<b>F.4. External data</b> <i>Check the quality, reproducibility and uncertainty of external data.</i>		As on F.1.	OK

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<b>G. Management and Operational System</b> <i>In order to ensure a successful operation of a Client project and the credibility and verifiability of the ERs achieved, the project must have a well defined management and operational system.</i>			
<b>G.1. Documentation</b> <i>The system should be documented by manuals and instructions for all procedures and routines with relevance to the quality of emission reductions. The accessibility of such documentations to persons working on the project has to be secured.</i>		The procedures are documented, controlled and available for personnel working for the project.	OK
<b>G.2. Qualification and training</b> <i>The system should describe the requirements on qualification and the need of training programs for all persons working on the emission reduction project. Performed training programs and certificates should be archived by the system.</i>		Defined procedures ensure the methodology and criteria for training of personnel working on emission reductions. And the mechanism of evaluation of effectiveness for the training imparted is clear in the procedures defined.	OK
<b>G.3. Allocation of responsibilities</b> <i>The allocation of responsibilities should be documented in written manner.</i>		Roles and responsibilities are defined in procedures and are in place.	OK
<b>G.4. Emergency procedures</b> <i>The system should contain procedures which provide emergency concepts in case of unexpected problems with data access and/or data quality.</i>		The system procedures define the back up mechanism for data protection	OK
<b>G.5. Data archiving</b> <i>The system should provide routines for the archiving of all data which is required for verifying the project's performance in the context of consecutive verifications.</i>		All the data required by the methodology were made available to DNV and the effectiveness of document control was satisfactory.	OK

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<b>G.6. Monitoring report</b> <i>The system includes procedures for the calculation of emission reductions and the preparation of the monitoring report.</i>		<p>Yes, the mechanism for the calculation of emission reductions and preparation of monitoring report is in place.</p> <p>Data pertaining to import of electricity from grid for the project when is plant is not operational is not included as a part of monitoring report submitted, though it has been observed being monitored along with net electricity exported. This needs to be included in the revised monitoring report, while arriving at net emission reductions:</p>	CAR 1
<b>G.7. Internal audits and management review</b> <i>The system includes internal control procedures, which allow the identification and solution of problems at an early stage.</i>		The procedures are defined	OK

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